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Twelfth Contribution to the Herpetology of Tropical America.
By E. D. Cope.

(Read before the American Philosophical Society, Dec. 19, 1884.)

I. ON A COLLECTION OF FISHES AND REPTILES FROM MONTEREY, NUEVO LEON, MEXICO.

The following list represents a collection which I made when on a visit to Monterey, in the month of November, 1883. The locality is an important one from the point of view of geographical distribution, as it is on the borders of the two great realms, the neotropical and the nearctic. How well it expresses this position may be seen from the accompanying identifications.

PISCES.

AMIURUS OLIVARIS Raf., a large specimen obtained in a fresh state, from the Salado river.

CAMPOSTOMA FORMOSULUM Girard.

HYBOGNATHUS CIVILIS, sp. nov.

Scales 6-41-4; Radii; D. I. 8; A. I. 8. Length of head equal depth of body, and contained in the total length (including caudal fin) 5.25 times. Eye contained 3.66 times in length of head, and 1.25 times in interorbital width; its form oval. The muzzle is obtuse at the extremity, and overhangs a little the premaxillary border. The mouth is small and horizontal, and the lips are not sharp-edged. The extremity of the maxillary bone is opposite the anterior nareal opening, not reaching the orbit by some distance. Infraorbital bones narrow. Frontal region convex transversely, with two rows of tubercles on each side of a smooth median space in the males; the two interior rows coming together on the middle line on the top of the muzzle. The rays of the pectoral fin are thickened in the male, and they do not reach the ventrals. The ventrals do not reach the vent, and their anterior origin is a very little in front of the anterior origin of the dorsal fin. The gular isthmus is wide.

Total length, .078; do. to opercular border, .010; do. opposite base of dorsal, .032; do. to opposite base of anal, .044; do. to base of caudal, .065.

Color, dusky above; below silvery with dusky shades; fins yellow at the base, unspotted.

This species is very abundant in the creek that rises in a large spring in the city of Monterey. Its nearest relative is the *H. flavipinnis* Cope from Western Texas. The latter differs in the larger eye, which enters the head 2.66 times, and equals the interorbital space, which is flat and not convex. There is also a distinct lateral band in the Texan species, which is in the *H. civilis* only faintly indicated. The characters are constant in small as in large specimens.

CLIOLA MONTIREGIS, sp. nov.

Related to the *C. jugalis* Cope, but more elongate in form, and with but eight anal rays. Scales 6-36-2½; Radii; D. I. 8; A. I. 8. Head entering length (without caudal fin) 3.5 times; depth entering the same 3.75 times. Eye entering head 3.2 times, and into interorbital width 1.2 times. The scales are rather closely imbricated. The dorsal outline is gently arched from the muzzle to the last dorsal ray. Caudal peduncle stout. Mouth terminal, descending backwards, the extremity of the maxillary bone extending to the line of the anterior orbital border. The anterior insertion of the ventral is a little in advance of that of the dorsal fin. Interorbital region a little gently convex, with scattered tubercles. The pectoral fins reach the ventral, and the latter the anal.

Total length, .049; to opercular edge, .011; to line of first dorsal ray, .021; to do. of anal fin, .030; to base of caudal, .038.

Color like that of a young *C. analostana*, without spot on dorsal fin. Generally silvery, darker above, with an indistinct plumbeous lateral band. No distinct caudal spot. No spots on fins.

The pharyngeal teeth are, some of them, lost. They appear to have been 4-4. They have an obtuse grinding surface and no crenations.

TETRAGONOPTERUS ARGENTATUS Bd. and Gird.

Very abundant in the city of Monterey. The pectoral fins do not reach the ventrals, as they are said to do in the above-named species by Jordan (N. Am. Ichthyology, 255). In this respect, this species resembles the *T. brevimanus* of Günther, which appears to be very near to the *T. argentatus*, and to which my specimens may be referable. I am not, however, sure that the species are distinct.

HEROS CYANOGUTTATUS Bd. and Gird.

Very abundant in the city of Monterey, where it reaches seven inches and more in length. It is a good pan-fish, and is the Moharra of the people.

LEPOMIS HAPLOGNATHUS, sp. nov.

Scales 6-35-14-15; Radii; D. X-11; A.III-9. Inferior pharyngeal bones narrow, with conical teeth; gill-rakers obtuse, rather stout; no supplementary maxillary bone, nor palatine teeth.

Dorsal and ventral outlines subequally convex; form oval. Lower lip more prominent, maxillary bone reaching anterior line of orbit. The latter enters the head (without flap) three and a half times, and the nearly flat interorbital space once only. The depth enters the length, without caudal fin, two and three-fifths times, and the head (without flap) enters the same 3.25 times. The ventral fin barely reaches the anal. The extremities of the soft dorsal and anal are of the same length, and fall far short of the base of the caudal. The edge of the latter is notched at the middle, and the lobes are beveled at the free borders. The opercular flap is rather long. Six rows of scales on the cheek.

The color is olivaceous, yellowish below. A blue band crosses the pre-orbital bone above, and another follows the premaxillary border and passes along the inferior border of the orbit. Below this, another blue line crosses the cheek. Other blue bands have been obscured by the alcohol. Flap, plain black.

Total length, M. .113; to end of flap, .033; to line of anal fin, .054; to base of caudal fin, .091.

This species much resembles the common *L. pallidus* Mitch. of the United States. It has, however, about ten less scales in the lateral line, and the gill-rakers are rather short and quite obtuse. It is also allied to, but still more different from, the *L. humilis*.

This species is the most southern of the group to which it belongs, and, excepting the species of *Micropterus*, the first known from Mexican waters.

Batrachia.

RANA HALECINA Kalm.

REPTILIA.

PHRYNOSOMA CORNUTUM Harl.

The most southern locality for this species.

HOLBROOKIA TEXANA Trosch.

The most southern locality for this species.

SCELOPORUS TORQUATUS Wiegm.

This species is abundant at Monterey, and also at Laredo, on the Rio Grande.

SCELOPORUS VARIABILIS Wiegm.

The most northern locality for this species.

REMARKS.

In this small collection we have a mixture of the nearctic and neotropical faunæ. Among the fishes, well-known northern genera swim in the waters of Monterey with the two neotropical types *Heros* and *Tetragonopterus*. Two of the reptilian species are the common forms of Texas, while the *Sceloporus variabilis* is a species of the Tierra Caliente, which extends as far as Tehuantepec.

II. JALAPA, VERA CRUZ, Flohr.

The following species were presented to me by my friend Mr. Flohr, of the city of Mexico. Some of the species are rare or new.

EUMECES FURCIROSTRIS, sp. nov.

The characters of this species may be best understood by the following table of the Mexican and Central American species of this genus :

I. No nasofrenal plate.

 a. Three supraorbital plates.

Frontal transversely divided; twenty-four rows of scales; a pale-bordered

PROC. AMER. PHILOS. SOC. XXII. 118. V. PRINTED MARCH 7, 1885.

black lateral band; three light stripes on head, the median bifurcating and joining the lateral ones on the muzzle.....*E. furcirostris* Cope.
Frontal not divided; twenty-four rows of scales; a brown lateral band, pale-bordered above, on head and neck.*E. dugési* Thominot.

aa. Four supraorbitals.

Rows of body scales in twenty-two to twenty-four rows; a lateral black band, pale-bordered above and below; head narrow.....

E. brevirostris Günther.

Rows of body scales twenty-four; a dark, pale-bordered lateral band; a median band bifurcating on muzzle*E. lynxe* Wiegmann.

Rows of body scales twenty-eight; a dark lateral band; head wide; large*E. sumichrasti* Cope.

II. A nasofrenal plate.

Body scales in twenty-one rows; two median dorsal rows, wider; postmental not transversely divided.*E. schwarzei* Fisch.

Body scales in twenty-eight rows; equal; postmental plate transversely divided.*E. callicephalus* Boc.

When the limbs are appressed to the sides the feet are separated by the length of the posterior foot. Back brown. The lateral and median stripes are bordered with black from above the axillæ forwards. The black unites on the head, which is of that color above; below the lateral black it is yellow. Sides and lower surface of body and tail, blue.

Length of head and body to vent, M. .054; of head to auricular meatus, .009; width of head at do., .007. Length of posterior limb, .016; of anterior do., .011.

CELESTUS CHALYBÆUS Cope, Proceedings. Academy Philada., 1866, p. 321.

This species differs from the *C. steindachneri* Cope, in having two prefrenals, one above the other. There is but one, an elevated prefrenal, in the latter species. Both have two postnasals* one above the other. In *D. chalybeus* the limbs are shorter, not meeting when appressed, by the length of the hind leg. In *D. steindachneri* they are only separated by the length of the posterior foot. The latter species is well figured by Bocourt in the Miss. Sci. de Mexique.

Besides the specimen of the *D. chalybeus* from Jalapa, the Smithsonian Institution has received the type from Orizaba from Sumichrast, and a second specimen from West Tehuantepec from the same naturalist.

SCELOPORUS AENEUS Wieg. Uniform leek green above. From the stomach of a *Eutænia scalaris*.

SCELOPORUS MICROLEPIDOTUS Wieg. From the stomach of a *Crotalus triseriatus*.

CATOSTOMA SEMIDOLIATUM D. & B.

*In my diagnosis of the *C. steindachneri*, Proceedings. Acad. Phila., 1868, p. 123, the word postnasal is misprinted frontal.

EUTÆNIA SCALARIS Cope.

NINIA DIADEMATA Bd. Gird.

CROTALUS TRISERIATUS Wiegm. *Crotalus lugubris* Jan. For the character and synonymy of this species, see the third division of this paper.

III. NOTES ON CENTRAL AMERICAN AND MEXICAN BATRACHIA AND REPTILIA.

Cæciliidae.

The species of this family, which have been described from the above region, are as follows. I now place them in the genera of this family as defined by Professor Peters in the *Monatsberichte Akademie, Berlin*, 1879, p. 930 :

GYMNOPIS OLIGOZONA. *Siphonops oligozonus* Cope.

Hab.?

GYMNOPIS SIMA. *Siphonops simus* Cope.

Costa Rica, *Von Franzius.*

GYMNOPIS PROXIMA. *Siphonops proximus* Cope.

Costa Rica, *Gabb.*

GYMNOPIS MULTIPLICATA Peters.

Veragua

DERMOPHIS MEXICANUS. *Siphonops mexicanus* Dum. Bibr.

Tehuantepec, *Sumichrast*; Tabasco, *Laszlo.*

DERMOPHIS SYNTREMUS. *Siphonops syntremus* Cope. I refer this species here provisionally only, as I have not been able to find the type specimen.

Belize.

HERPELE OCHROCEPHALA. *Cæcilia ochrocephala* Cope.

Panama, *Gallar*, *Bransford.*

CÆCILIA ISTHMICA Cope.

East side of Darien, *Selfridge.*

Anguidæ.

BARISSIA FIMBRIATA Cope. *Gerrhonotus auritus* "Cope," Bocourt, Mission Scientif. Mexique, Reptiles, p. 337, Pl. xxi, fig. 2, xxi A, 7, 7a, not of Cope.

This species, which is handsomely figured by Bocourt, is not the species I described as *Gerrhonotus auritus*, but is a new species of Barissia. It agrees with the *B. antauges* Cope in having three pairs of supranasal plates instead of the two pairs of the other species. Its ear processes and other characters distinguish it from *B. antauges*.

Teidae.

VERTICARIA HEDRACANTHA. *Amiva hedracantha* Boocourt, Miss. Sci. Mexique, Rept., p. 263.

The third species of this genus.

Colubridæ.

LEPTOGNATHUS TORQUATUS Cope. *Dipsadomorus fasciatus* Bocourt, Bulletin Soc. Philomathique, Paris, 1884, March; nec *Leptognathus fasciatus* s. *Tropidodipsas fasciata* Günther, 1868.

LEPTOGNATHUS SARTORII Cope, 1863. *Leptognathus sexscutatus* Bocourt, Bulletin Soc. Philomathique, Paris, 1884, March.

Hab. Guatemala, *Bocourt*; Vera Cruz, *Sartorius*.

MESOPELTIS MULTIFASCIATUS. *Leptognathus multifasciatus* Jan. M.S. Bocourt, Bullet. Soc. Philomathique, Paris, March, 1884. *Asthenognathus* Bocourt.

The genus *Asthenognathus* Boc., 1884, appears to be identical with *Mesopeltis* Cope, 1866.

EUTÆNIA INSIGNIARUM, sp. nov.

Scales in twenty-one rows, all keeled except inferior row, which sometimes presents short keels at the bases of the scales. Superior labials eight, eye over fourth and fifth. Three postoculars. Temporals 1-2. Lateral band on the third and fourth rows of scales. No dorsal band, but the dorsal region yellower than the sides for a width of from four to six scales. A row of black spots above the lateral stripe, which are sometimes divided so as to form two rows one above the other. A row of incomplete black spots below the lateral line, which are formed by the adjacent black edges of three or four scales. A black spot on each side behind the angle of the mouth, which extend upwards to near the occipital shields, and is preceded by a light spot of half crescentic form. The last superior labial and temporals in front of this space, have black edges. Superior labials slightly black-edged. No spots on the parietal plates. Gastrosteges, 164; urosteges, 68 to 74. Total length of a rather small specimen, M. .435; of tail, .096; to canthus oris, .014.

I took the typical specimen of this species from a bunch of herbage which grew from the wall of the aqueduct at the castle of Chapultepec near the city of Mexico. Professor Herrera, director of the Escuela Preparatoria of the city of Mexico, showed me a living specimen which was taken near the city, and gave me a third, preserved in spirits. M. Bocourt sent a specimen to the Smithsonian Institution, and Dr. Dugés gave me a fifth, which was taken near Guanajuato.

This species is nearest to the *E. flavilabris*. I give comparative diagnoses of these two, together with that of a third species which is related to both, which I obtained on the upper waters of the Gila river in New Mexico.

- First row of scales smooth or nearly so; tail shorter, urosteges, 68-74; no dorsal stripe nor occipital spots *E. insigniarum*.
 First row of scales smooth; tail shorter, urosteges 71; a dorsal stripe and occipital spots. *E. flavilabris*.
 First row of scales keeled; tail longer, one fourth of total, urosteges, 84; a dorsal stripe and occipital spots. *E. megalops*.*

EUTÆNIA CHRYSOCEPHALA, sp. nov.

The discrimination of this species will be facilitated by comparing it with other species of the genus, which occur in Mexico and Central America, in which the lateral stripe is on the second and third rows of scales.

I. Scales in seventeen rows.

- Inferior row keeled; urosteges, 81; no dorsal stripe; a large black nuchal spot; head yellow. *E. chryscephala*.

II. Scales in nineteen rows.

- Lower row of scales keeled; urosteges, 91; a dorsal stripe; lateral stripe not defined below; gastrosteges not black at the base; a large nuchal spot; head brown..... *E. collaris* Jan.

- Lower row of scales smooth; urosteges, 67; a dorsal stripe; lateral stripe bordered below by a brown stripe; a black nuchal spot; head brown..... *E. pulchrilatus*.

- Urosteges, 60-65; no stripes, but four rows of small spots which do not touch each other, but become larger on the neck; a large oblique black band on each side the nape; head brown; keels very strong...

E. sumichrasti.

The *Eutænia cyrtopsis* of Kennicott belongs to this group, and comes nearest to the *E. collaris* Jan. In fact, the second variety of the *E. cyrtopsis*, described by Kennicott (Proc. Acad. Philada., 1860, p. 334), is the *E. collaris* Jan. The latter is a common species in Mexico. I have it from Guanajuato, Dugés, Orizaba, Sumichrast; from the valley of Toluca, Vasquez, and from Guatemala from Dr. Van Patten. I do not find the gastrostega to exceed 153 in number, while Kennicott gives 179 as the number in his types from Coahuila. I therefore keep the species apart, although I shall endeavor to verify the number given by Kennicott on his types.

The *E. chryscephala* has a slender body, and a wide, flat head, with a large eye. The size of the latter contracts the frontal plate, so that it is not wider than the superciliaries posteriorly. The scuta are otherwise as usual. Superior labials eight, none higher than long, fourth and fifth below orbit. The inferior surfaces are darker than in *E. collaris*, which causes a better definition of the lateral line than in that species. There are representations of two rows of lateral black spots, but they are merely

* *Eutænia megalops* Kenn. Proceedings. Acad. Phila., 1860, p. 330. My specimen is from Duck creek, a tributary of the Gila. Gastrosteges 164; total length, M. .610; tail, .158. Color above brown, a few scales black-edged near the stripes. A postoral crescent, black-edged behind.

black scale-borders, those of the inferior row the more distinct. A similar row of black edges on the first row of scales. All of these spots become distinct on the sides of the neck. Nuchal spot large, black, and with a shallow notch behind; no occipital or other spots on the head. The gastrosteges have black bases, a character not seen in any of the other species here referred to.

Gastrosteges, 151. Total length, M. .430; of tail, .135, or one-third the total.

This handsome species was obtained at Orizaba, Vera Cruz, by Dr. Sumichrast.

EUTÆNIA PULCHRILATUS, sp. nov.

At first sight this species looks like the *E. flavilabris* Cope, but it has characters of the *E. collaris*, and adds some of its own.

The dorsal stripe, as in *E. collaris*, occupies but a single row of scales. The lateral stripe, occupies the adjacent edges of the second and third rows. The entire front row is covered by a broad brown band, which defines the lateral light band very distinctly below. This is not seen in either of the species above named. There are two rows of black spots between the dorsal and lateral bands, but the keels of all the scales involved in them are brown. There are no spots below the lateral light line, either on the neck or elsewhere. A large nuchal black spot, which is notched behind by the median band. No postoral crescent. Head above brown; lower surfaces uniform greenish, except tail, which is yellowish below. Occipital spots very indistinct.

The head is not very distinct from the neck. The frontal plate is wider than the supraorbitals. Gastrosteges, 158; urosteges, 67. Total length, M. .465; of tail, .105.

One specimen from Dr. Dugés; locality uncertain, but probably Guanajuato.

EUTÆNIA SUMICHRASTI Cope. Proceedings Acad. Philada., 1866, p. 306.

To the description already given, I add some notes taken from a third specimen. The frontal plate is wider than the supraorbitals. There are eight superior labials, and the orbit is bounded by the fourth and fifth. Temporals, 1-2; orbitals, 1-3. There is a trace of a dorsal stripe on the nape, which divides the nuchal spot in two. No postoral crescent. Below the square lateral spots on the sides of the neck is a row of smaller, alternating square spots, which serve to define a lateral stripe for a short distance. Superior labials brownish-yellow, brown edged. Inferior surfaces uniform dirty yellow.

The keels of the scales are very strong, except those of the first row, which are obsolete. Gastrosteges, 148; urosteges, 65. Total length, M. .265; length of tail, .065, or one-fourth the total.

The locality whence the typical specimens of this species were obtained is Orizaba, Vera Cruz. The locality of a third specimen is uncertain. It

may be the plateau of Costa Rica at Cartago, from Dr. Van Patten's collection. If this indication be correct, this is the most southern species of the genus.

STORERIA TROPICA, sp. nov.

This species agrees with the *S. dekayi* Holbr., excepting in two points. It has but six superior labials. The diminution in the number is posterior to the orbit, and the fifth and sixth scuta are of a different form from those of the *S. dekayi*. They are longer and less elevated. The second character is in the color. This species lacks the dark mark that descends from the orbit to the superior labial margin in the *S. dekayi*.

Peten Guatemala, *H. Hague*.

COLUBER MUTABILIS, sp. nov. *Coluber triaspis* Cope, Proceedings Amer. Philos. Soc., 1879, p. 271, nec Copei.

Two species of this genus are already known from Mexico, the *C. flavirufus* and *C. triaspis* Cope, which are distinguished by various peculiarities both of scutellation and of color. A considerable number of specimens have, however, been received by the Smithsonian Institution, which present intermediate characters. On study it appears that these really represent a species distinct from either, and one which inhabits the elevated regions of the country, while those previously known belong to the Tierra Caliente. I distinguish the species as follows:

Scales in 27-9 rows; one loreal; nine superior labials; three rows of temporal scuta between labials and occipital; dorsal and lateral spots large and close together; an oblique light band on post-temporal region, and a narrow yellow median spot on nape; marks not becoming obsolete..... *C. flavirufus*.

Scales in 31-3 rows; one loreal; eight upper labials; three rows of temporal scuta; dorsal and lateral spots smaller, and separated; three longitudinal bands behind frontal region; all the markings becoming obsolete in a general brown color, with maturity..... *C. mutabilis*.

Scales in 35 rows; two or three loreals; eight upper labials; four rows of temporals; dorsal and lateral spots smaller, separated; three longitudinal black bands from frontal region to nape; ? maturity.

C. triaspis.

Of the *Coluber mutabilis* I have before me four specimens from Vera Paz from Mr. Hague; one from the plateau of Costa Rica from Mr. Zeledon, and one from the central or elevated part of the State of Tehuantepec, from Mr. Sumichrast. I have examined a seventh specimen in the collection of Professor Alfredo Dugés, who took it in the State of Guanajuato. Of the *C. flavirufus*, there are three specimens before me; the type from Tabasco, Berendt; one from Vera Cruz from Sartorius, and one from Yucatan from the Schott collection of the Commission Científica. I have examined two large specimens in the city of Mexico brought from the State of Chiapas, from Dr. R. Montes-de-Oca.

Slight variations sometimes occur in the *C. mutabilis*. One specimen has 35 rows of scales; another has but two rows of temporals on one side; another has nine superior labials on one side.

The head is long and rather narrow. The prefrontals are, each, longer than wide; the frontal is not narrowed; the parietals are truncate behind. The suture between the loreal and the prefrontal is oblique, running posteriorly downwards, so that its superior border is only half as long as the inferior. The preocular does not reach the frontal. There are, as in the other Mexican species of the genus, but two postoculars. The eye is over the fourth and fifth labial. None of the labials behind the fifth is elevated, but the sixth is elongate so as to border the ends of the three long temporal scuta. The inferior of these covers the seventh and part of the eighth labials, and supports above it two others like it, all being directed downwards and forwards. The superior encloses little scale with the superior postocular. Inferior labials, eleven; geneials well developed, the posterior smaller and separated by scales.

In a young specimen 450 mm. in length, where the color markings have not become obsolete, there are 76 dorsal spots, of which 51 are between the nape and the vent. These spots are transversely quadrate, covering 11 scales transversely, and two and a half scales anteroposteriorly. They are dark brown with light edges, and paler centers. The interspaces are less than two scales long. The lateral spots are opposite the intervals and are in one row; they are subround or suboval. There are two brown stripes on the nape which, instead of uniting at both ends, as is the case in the *C. flavigularis*, are separate posteriorly and diverge anteriorly, extending to above the posterior part of the orbits. Between them another band occupies the middle line, but is more or less broken. A broad brown band convex forwards between the fronts of the orbits. A brown spot behind orbit. Below immaculate.

Gastrosteges, 282; anal double; urosteges, 109. Total length, M. 1.090; of tail, .235 mm.

The typical specimen is from Vera Paz; No. 6735 Mus. Smithsonian.

MANOLEPIS NASUTUS. *Tomodon nasutus* Cope, Proceedings Academy Philadelphia, 1864, p. 166.

This species cannot enter *Tomodon* D. & B., because it has a divided anal plate, and no scale-fossæ, though it agrees with that genus in its single nasal plate and smooth scales. I therefore propose the genus *Manolepis* to embrace it and similar species.

HYDROCALAMUS QUINQUEVITTATUS. *Homalopsis quinquevittatus* Dum. Bibr. Erp. Gen. vii, p. 975. *Calopisma quinquevittatus* Jan. Elencos Sistemático, p. 75. *Hydrops lubricus* Cope. Proceeds. Acad. Phila., 1871, p. 217.

Vera Paz, *Dum. Bibr.*; E. Tehuantepec, Streets.

Duménil and Bibron put this species quite out of its place, so that I did not perceive it in my *Hydrops lubricus*. It requires a new generic desig-

nation, which I give above. It is allied to *Dimades*, *Abastor*, etc., but differs from them all in having a grooved posterior maxillary tooth. The characters of the genus *Hydrocalamus* are :

Opisthoglyph. Two internasal and two prefrontal plates. Two nasals, a loreal, and one preocular. Anal scutum divided. Scales smooth.

The genus differs from the nearest opisthoglyph calamarians as follows : From *Elapomorphus* and *Scolecophis* in the divided anal scutum, and from the former in its two nasals : from *Procinura* in the absence of the rugosities of the caudal scales.

LIMNOPHIS SEPTEMVITTATUS. *Calopisma septemvittata* Fischer, Verhandl.

Naturwiss. Verein, Hamburg, 1879, p. 84, Pl. i, f. 3.

This species agrees exactly with *Limnophis* Günther in scutellation, and approaches very nearly in dentition. It is not referable to any other genus now named.

TRIMETOPON GRACILE. *Ablabes gracilis* Günther. Ann. Magaz. Nat.

Hist., 1872, p. 18. From Costa Rica, Günther.

The characters of the genus *Trimetopon* are as follows :

Two internasals ; one prefrontal plate. Two nasals ; rostral not produced ; a loreal and one preocular. Scales smooth, with one pore. Anal divided.

There are three other aglyphodont calamariform genera, with one prefrontal plate. From *Colorhogia* Cope, *Trimetopon* differs in having two nasal plates ; from *Opisthotropis* Günth., in having smooth scales ; and from *Chersodromus* R. & L., in the presence of a preocular plate, and in the smooth scales.

GYALOPIUM PUBLIUM Cope. American Naturalist, 1884, p. 163. *Ficimia*

publia Cope, Proceeds. Acad. Phila., 1866, p. 126. *Ficimia ornata*

Bocourt, Miss. Sci. Mexique, 571, Pl. xxv, f. 10.

Hab. Yucatan, Schott.

GEAGRAS REDIMITUS Cope. Journal Acad. Philada., 1875, p. 141.

Sphenocalamus lineolatus Fischer, Oster Programm des Akad. Gymnas., Hamburg, 1883, p. 5, Pl. i, figs. 3-5.

Tehuantepec, *Sumichrast* ; Mazatlan, *Fischer*.

GEAGRAS FRONTALIS Cope. Journal Academy Philada., 1875, p. 142.

Tolua frontalis Cope. Proceeds. Acad. Phila., 1864, p. 147. *Pseudoficimia pulchra* Bocourt. Miss. Sci. Mexique, 572, Pl. xxxv, f. 12.

Colima, Xantus ; Guadalaxara, Major.

GEAGRAS SUMICHRASTI Bocourt. Cope, Amer. Naturalist, 1884, p. 162.

Enulius sumichrasti Bocourt. Miss. Sci. Mexique, 538, Pl. xxxi, f. 6.

W. Tehuantepec, *Sumichrast*.

GEAGRAS LONGICAUDATUS Cope. Amer. Naturalist, 1884, p. 162. *Enulius*

murinus Cope, Bocourt, Miss. Sci. Mexique, p. 537, Pl. xxxv, f. 9, nec Copei.

West Tehuantepec, *Sumichrast*.

LEPTOCALAMUS UNICOLOR. *Geophis unicolor* Fischer. Abhandl. d. Naturwiss. Vereins, Bremen, 1881, p. 227.

This species is allied to those of the genus *Catostoma*, but Fischer remarks that it has an elongate posterior maxillary tooth, or a syncranterian dentition. This requires its separation from *Catostoma*, and its location in another genus, as indeed is remarked by Fischer, *l. c.* This has been already established by Günther for another species.

RHEGNOPS ZEBRINUS Jan. *Rhabdosoma zebrinus* Jan Bocourt, Miss. Scient. Mexique, Pl. xxxiv, fig. 1.

This and another species are separated by Bocourt from the genus *Catostoma* (*Geophis*) on account of the divided anal scutum. He applies to this genus the name *Rhabdosoma* Dum. Bibr. Unfortunately there is not a species of that genus, as enumerated by Duméril and Bibron, which possesses this kind of an anal scutum, and they must all be referred to *Catostoma*, of which the name *Rhabdosoma* is a synonym. Meanwhile in the year 1866,* I proposed for a species having the characters of Bocourt's *Rhabdosoma*, the name *Rhegnops*. This genus differs from *Carphophiops* in the two nasal plates, and the single pair of geneials. The type is *R. vizoninus* Cope, *l. c.*, from Honduras.

CONTIA MICHOCANENSIS Dugés MS.

Muzzle moderately prominent, rounded; eye moderate; body cylindric; tail short, acute at end, not slender. Scales without fossæ.

Rostral plate much wider than high. Internasal small. Frontal large, longer than wide, posterior angle obtuse. Superciliaries moderate, much narrowed anteriorly. Parietals as long as the frontal, rounded posteriorly. The single nasal is narrow and is obliquely placed, being in contact by its posterior border with both the prefrontal and loreal, and not touching the second superior labial. Loreal longer than high. Preocular touching prefrontal and third superior labial. Two postocular, the inferior resting on the fourth and fifth superior labials. Temporals 1-2. Seven superior labials, the third and fourth entering the orbit, the sixth very small. Six inferior labials, of which four are in contact with the geneials; post-geneials one-third the length of the pregeneials. Between the former and the gastrosteges, seven rows of small scales. Scales in fifteen rows. Gastrosteges, 152; anal divided; urosteges, 37.

Length of head and body, M. 0.160; of tail, .035; diameter at middle of body, .005.

Ground color probably red in life; in alcohol it is a clear yellow. A large black spot covers the frontal, and the superciliaries, less their anterior extremities, surrounds the eye, and terminates on the loreal, and the corresponding superior labials. It extends also on the antero-internal angles of the parietals. Another black spot forms a wide collar interrupted on the median line below. Then follow thirteen transverse rings, each oc-

* Proceeds. Academy, Philada., p. 128.

cuping five or six rows of scales on the back, narrowing below, where some of them are interrupted. Two of the rings are so wide as to lead to the belief that each of them consists of two rings united, so that the whole number is sixteen. Tail unspotted. The third, fifth, seventh and ninth interspaces from the head have the scales black-tipped, and are wider than the black bands. The skin has an elegant clear blue reflection.

From the state of Michoacan, Dr. A. Dugés.

Crotalidae.

CROTALUS POLYSTICTUS Cope. *Proceeds. Acad. Philada.*, 1865, p. 191.

Crotalus triseriatus Wagl. *Jan Iconographie des Ophidiens*, nec Wagleri. *Crotalus ximenesii* Dugés, *Naturaleza, Mexico*, 1877, p. 23, pl. i, figs. 18-20.

Table land of Mexico.

I give the comparative characters of this species, and of the allied *C. triseriatus* of Wiegmann. I think that Professor Jan has transposed the name of that species to this one. I took a full description of the Crotali in the museum of Munich, from which apparently Wagler drew up his description (*Naturliches Syst. d. Amphibien*, 1830, p. 176), and none of them belong to the present species. My notes made in Berlin, which I visited immediately afterwards, state that the specimens labeled *C. triseriatus* in the museum of the University, where Wiegmann worked, are like those of Munich.

The *C. triseriatus* varies more than the *C. polystictus*. My descriptions are drawn up from five specimens of the latter, and six specimens of the former.

Two loreal plates, one above the other. Four internasals and four prefrontals, all longer than wide; three rows of interorbital scuta and scales. Infraorbital scales in two rows of equal size. Four elongate distinct brown spots behind occipital region; a narrow yellow band across frontal region. A large brown spot below orbit, and one below maxillary fossa. Five rows of large dorsal spots. Scales in twenty-seven rows; labial scuta fourteen; subcaudal scutella 18 and 19. Generally of larger size.

One of the five specimens above mentioned has twenty-five rows of scales.

The specimens all come either from Guanajuato (Dugés), or from the valley of Mexico (Herrera).

CROTALUS TRISERIATUS. *Uropsophus triseriatus* Wieg. Wagler *Nat. Syst.*

Amphib., 1830, p. 176. *Crotalus lugubris* Jan. *Prodrome d'un Iconogr. Revue et Mag. de Zoölogie*, 1859, p. 31, Pl. E. Dugés' *Naturaleza, Mexico*, 1877, p. 25.

One loreal plate; two internasals and four prefrontals, wider than long, or the latter, square. Three or four rows of interorbital plates and scales. Two rows of infraorbital scales, of which the superior is very small. Colors plainer. Two post-occipital spots; no frontal band; no infra-

orbital or infrafossal spots. One row of *large* dorsal spots. Twenty-three rows of scales; superior labial scuta 11-12; subcaudal scutella 22-29.

There are usually two rows of small spots on each side of the large dorsal series, and sometimes the latter breaks more or less into two rows. In a specimen from Guanajuato (Dugés), the dorsal spots continue into the small lateral spots, forming lateral cross-bands as in *Crotalus enyo*. In a specimen from the valley of Toluca, the lateral spots are obsolete, and there are 25 rows of scales. The anterior part of the superior preocular is cut off to form a second loreal behind the usual one.

The *Crotalus intermedius* of Fischer is near this species, but has several peculiarities according to Fischer, which may distinguish it.

Hab. Guanajuato, Dugés; Jalapa, Flohr; Toluca, Vasquez.

CROTALUS BASILISCUS Cope. Proceedings. Academy Phila., 1864, p. 66.

Crotalus rhombifer Latreille, Dugés La Naturaleza, Mexico, 1877, p. 22.

This species, originally discovered by Xantus at Colima, is generally distributed in Mexico. I have not seen it from east of the plateau. Dugés has obtained it at Guanajuato.

IV. ARUBA, LEEWARD ISLANDS; Julien.

The present collection was made by Prof. A. A. Julien, of Columbia College, New York. Aruba is the westernmost of the series of islands which lie in the Caribbean sea along the north coast of South America. Its position is but a short distance to the eastward of the mouth of the Gulf of Venezuela. Its position gives its fauna considerable interest. The birds brought by Professor Julien, have been already reported on in papers published by the New York Academy of Sciences, by my friend, George N. Lawrence.

1. **PALUDICOLA BRACHYOPS** Cope.
2. **GONIODACTYLUS ALBOGULARIS** D. & B.
3. **GONIODACTYLUS VITTATUS** Wiegm.
4. **PHYLLODACTYLUS JULIENI**, sp. nov.

This species is nearly related to the *P. tuberculosus* Wiegm., but may be distinguished by three characters. First, the abdominal scuta are less numerous, forming about thirty transverse series between axilla and groin; while those of *P. tuberculosus* are in at least forty cross-rows. Second, the dorsal tubercles form uninterrupted longitudinal series, no small scales intervening between those of one row; although small scales separate those of different rows. Third, there are three scuta behind the mental. In most specimens of the *P. tuberculosus* there are two; in one only I find three. There are five narrow, straight blackish cross-bands between the axilla and groin; one in the front of the arms, and one across the nape, a brown band posterior to the eye. These markings become obsolete in the

largest specimens. The legs are light brown with pale spots, marks which are most distinct in adults. When the limbs are appressed to the side, the elbow marks the middle of the longest posterior toes.

The characters of this species may be well understood by comparing it with other species of the genus as follows:

I. Tubercles larger and more numerous, keeled.

- Abdominal scales in 30 transverse and 17 longitudinal rows; two postmentals and four scales behind them *P. ventralis* O'Sh.
 Longitudinal series uninterrupted; abdominal scales in 30 transverse, and 21 longitudinal rows; 3 postmentals and six scales in the row behind them *P. julieni* Cope.
 Longitudinal series interrupted by scales; abdominal scales in 40 transverse and 25 longitudinal rows *P. tuberculatus* Wieg.

II. Tubercles fewer, smaller and not keeled.

- Tubercles in rows; abdominal scales in 56 rows; three postmental scuta; discs larger *P. galapagoënsis* Pet.
 Tubercles in rows; abdominal scuta in 56 rows; four postmentals; discs very small *P. microphyllus* Cope.
 Tubercles not in rows, more obscure; abdominal scuta in 50 rows; two or three postmentals; discs larger; cross-banded *P. inaequalis* Cope.

The abnominal scales are in more numerous longitudinal rows than described in the allied *P. ventralis* O'Shaughnessy* of Jamaica, and the postmental plates and scutes have quite a different arrangement. The six scales of the first row form a series very convex backwards. Several specimens.

THECADACTYLUS RAPICAUDA Houtt.

TRETIOSCINCUS BIFASCIATUS Dum.

CNEMIDOPHORUS MURINUS D. & B.

AMIVA BIFRONTATA Cope. This species is now well known to be a New Grenadian species, and not to be found in the Virgin islands as was originally suspected.

IGUANA TUBERCULATA Laur.

ANOLIS LINEATUS Daudin. Two specimens which only differ from the description of Duméril and Bibron in having the muzzle a little longer or the nostril a little posterior. The latter is separated from the rostral plate by two scales, instead of one, as described by Duméril and Bibron. These authors give Martinique as the habitat as indicated by a label.

V. CURACAO; U. S. Fish Commission.

A jar of reptiles from the above island, obtained by the naturalists of the U. S. Fish Commission, was submitted to me by Professor S. F. Baird, director. Curacao, as is known, is one of the same group as Aruba, and

*Annals and Mag. Nat. His., Oct., 1875.

the determination of its fauna is a point of considerable interest. Unfortunately the number of species taken is small. The names are as follows : **CNEMIDOPHORUS MURINUS** D. and B. Specimens as large as the *Amiva surinamensis*, No. 13,860.

GONIODACTYLUS ALBOGULARIS D. and B. No. 13,859.

Var. I. Four specimens. A pale dorsal band bounded on each side with a row of brown spots ; two rows of blackish spots on each side ; belly unspotted ; throat faintly lined.

Var. II. One specimen. Brown above with a blackish collar pale edged behind, which sends forwards a brown band to the eye. Above this a short brown band from eye. Lips and throat with some brown speckles.

Var. III. One specimen. Brown above ; a blue-black band along lips to shoulder. A short blue-black inguinal longitudinal band ; below dusky, except throat, which is very pale, but with faint lines spreading on each side from a pale median band.

VI. NICARAGUA ; Moser.

A small collection was sent to the National Museum by Lieut. J. F. Moser, U. S. N. It contains the following species :

DENDROBATES TINCTORIUS Schneid. No. 13,736.

DENDROBATES TYPOGRAPHUS Keferst. No. 13,738.

AGALYCHNIS HELENÆ Cope, sp. nov.

Head large and wide, muzzle short. Long diameter of eye a little less than length of muzzle in front of it measured obliquely, or one-third longer than muzzle measured axially, and entering width between anterior canthi of eyes one and one-half times. Nostril nearly terminal ; canthus nostralis distinct concave. The tympanic membrane is not distinct, and is a sub-vertical oval, two-thirds the long diameter of the eye. Inferior palpebra with oblique sub-parallel white veins. The vomerine teeth are in short series directed inwards and backwards from the anterior inner angle of the large choanæ. Ostia pharyngea half as large as choanæ. Tongue large, wide and openly emarginate behind. The inner toes of both anterior and posterior feet are not opposable, and are furnished with well developed discs. Both are shorter than the adjacent second digit respectively. The fingers are one-fourth webbed, and the toes one-third webbed. The heel of the extended leg reaches the end of the muzzle ; the closed leg marks the end of the third toe with the knee. The width at the sacrum is but a little more than half that of the head posteriorly. Skin smooth above everywhere. Length of head and body, M. .030 ; width of head posteriorly, .0115. Length of extended fore limb, .018 ; of extended hind limb, .042. Of the latter, the foot measures .0175, of which the tarsus is .0085.

The heel and the elbow present a dermal thickening at the apex ; the inside of the elbow joint is also shortly webbed.

The color in spirits is greenish cream color ; probably representing green, yellow and purplish in life. The same color covers the external faces of

fore-arm, tibia, tarsus, and fifth posterior toe, and a narrow band on the upper surface of the femur. The humerus, with the concealed surfaces of the limbs, and a well defined band from axilla to groin are dark purplish, which is only interrupted by five vertical narrow yellow bands, which cross the lateral band, and join a yellow border which bounds its superior edge. Toes and lower surfaces, yellow, deeper on the abdomen.

This very pretty tree frog is most nearly allied to the *Agalychnis callidryas* Cope, a species which has been found both in Panama and in Vera Cruz. It differs in the dark color of the concealed surfaces, and in the shorter, wider head, and in the smaller tympanic membrane. No. 13,737.

HYLA PUMA, sp. nov. Size of *H. carolinensis*.

Fingers with rudiment of web between external digits; toes half webbed. Vomerine teeth in transverse patches, whose edges are in line of the posterior border of the posterior nares. Ostia pharyngea one-third as large as choanæ. Tongue subround, nearly entire. Tympanic membrane distinct, an oblique oval, its long diameter two-thirds that of eye fissure. Canthus rostralis well marked, concave; nostril nearly terminal, separated from orbit by a space equal long diameter of tympanum. Heel reaching middle of lores. Head rather small, muzzle short. Belly areolate, all superior surfaces smooth. Digital dilatations equal half diameter of tympanic disc. Color, above, uniform dark brown; below, uniform light brown.

Total length, M. .045; of head from posterior line of tympana, axial, .015; width of do. at posterior line of tympana, .018; length of posterior limb, .071; of posterior foot, .031; of tarsus, .017; of anterior limb, .028; of anterior foot, .013.

This species is near to the *H. phœota* Cope of the Darien region, and the *H. pulchella* D. and B. of Southern Brazil. In the former the head is larger in proportion to the body, and the hind limbs are rather longer. The color includes cross-bands on back and limbs, and posterior to eye, all of which are wanting from *H. puma*. The *H. pulchella* has much the same proportions, etc., but has longer hind limbs, and a different coloration, especially a very distinct lateral band. No. 18,735. One specimen.

CORYTHOPHANES MEXICANUS Wagler. No. 13,745.

ANOLIS BRANSFORDI Cope. Proceedings. Academy Phila., 1874, 67. No. 13,739.

PLIOCERCUS DIMIDIATUS Cope. A specimen with seventeen black annuli on the body, with the scales of the light interspaces black-tipped. In the type there are fourteen annuli, and the light-colored scales are not black-tipped. No. 13,741.

DRYMOBIUS BODDAERTI Seetzen. No. 13,743.

TRETANORHINUS NIGROLUTEUS Cope. No. 13,744.

The nasal plates of this specimen do not meet in front of the internasals as described in the type specimen; otherwise they agree.

BOTHRIOPSIS BRACHYSTOMA Cope. No. 13,742.

VII. UPPER BENI RIVER, BOLIVIA; Heath.

The collection described below, was made by Dr. Edwin R. Heath during his explorations of the Upper Beni river in Bolivia. The country through which Mr. Heath passed had not been previously examined by any naturalist, hence considerable interest attaches to this collection.

DERMOPHIS CRASSUS, sp. nov.

The most robust species of the genus. Tentacular fossa near to but distinct from the eye, half way between canthus oris and nostril. Annuli 95, all complete except the first, which is not complete above; the third and fourth not complete below; and 94th and 95th, which are incomplete above. General form depressed. Width of head at first fold, equal length from same point. Length, mm. 423; width, 22 mm. or $\frac{19}{4}$. Color black above and below; the plicæ when opened, white within.

The number of plicæ is smaller than in any other species, and the form is more robust. Two specimens, besides a third from Eastern Peru, obtained by Professor Jas. Orton.

MABUIA AGILIS Raddi.

DIPLOGLOSSUS FASCIATUS Fitz.

AMPHISBÆNA BENIENSIS, sp. nov.

Of the group to which *A. pretrei*, *A. vermicularis*, *A. angustifrons* and *A. occidentalis* belong. Muzzle moderately elongate, obtuse; rostral plate a little visible from above. Nasofrontals broader than long, with nearly straight borders. Prefrontals longer than wide, with the posterior angle a little less than right. Frontals small; forming together a pentagon, each bounded posteriorly by a single small square parietal. One diamond-shaped ocular, showing the eye indistinctly in its anterior angle. Labials $\frac{1}{4}$; the last one above and last two below, small; the latter pair not strongly separated. First superior labial longer than high; second higher than long; third longer than high, and separated from the ocular by a larger scute. Symphyseal scute subquadrate and truncate behind, bounded laterally by the first inferior labial only. Postsymphyseal nearly square, bounded laterally by the second inferior labial only. It is followed by two square scuta, each of which is bounded laterally by a large plate, which bounds the third inferior labial below.

Tail with sixteen annuli; preanal plates eight, or if the full extent of the fissure be considered, by ten plates. Preanal pores six. Total length 335 mm.; of head to canthus oris, .012; of tail, .025 M. Color above, light reddish brown; below yellow.

The scutellation of the head of this species distinguishes it from all the species named. The tail is as short as in the *A. angustifrons* Cope (Proceed. Acad. Philada., 1861, p. 76). See below, in synopsis of *Amphisbæna*.

APOROPHIS CONIROSTRIS Günth.

A variety in which the dark, transverse dorsal marks are interrupted on

Fig. 1

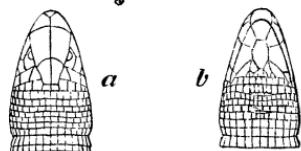


Fig. 2

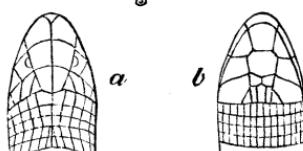


Fig. 5



Fig. 3

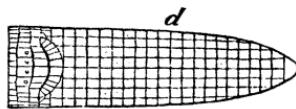
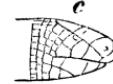
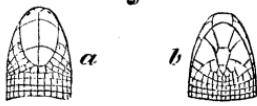


Fig. 6

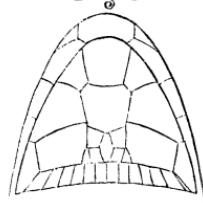


Fig. 7

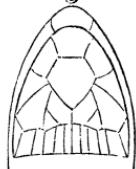


Fig. 4

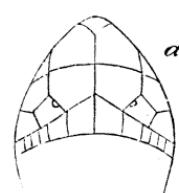
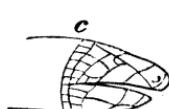
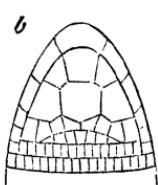
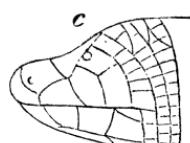


Fig. 8



the middle line, and are not always continuous, and are pale-bordered in front, and with a series of black spots below the lateral pale band. The light color below is red in life.

OPHROMORPHUS MELEAGRIS Shaw var. **SEMITLINEATUS** Cope. Proc. Acad. Phila., 1860, 252. *Liophis merremii* D. & B., var.

OPHEOMORPHUS TYPHLUS Linn.

CYCLAGRAS GIGAS D. and B.; *Xenodon gigas* Dum. Bibr.; *Lejosophis gigas* Jan.

This species, with the *Liophis bicinctus* Dum. Bibr., belongs to a genus distinct from both Liophis and Xenodon. Its characters are: Dentition diacraterian; anal acute, entire; a circle of scales, with the superciliary surrounding the eye; scales smooth. Professor Jan has already distinguished the genus, but has given it a name (Lejosophis) which, when properly spelled (Liophis), is one which has already been used. I, therefore, give it another name, as above.

XENODON SEVERUS L.

OXYRRHOPUS SEBÆ D. & B.

PHILODRYAS VIRIDISSIMUS L.

LEPTOPHIS MARGINATUS Cope.

VIII. RIO GRANDE DO SUL, BRAZIL; H. Smith.

The Naturalist Brazilian Exploring Expedition, under the direction of Mr. Herbert H. Smith, commenced its work in the province of Rio Grande do Sul. The principal collections were made at Sao Joao do Monte Negro. The present catalogue shows that the snake-fauna is not poor, and it adds some important points in the history of the geographical distribution of the Batrachia and Reptilia of South America. A number of the species in the collection are sent for the first time to the United States.

Batrachia.

BUFO DORBIGNYI Dum. Bibr.

BUFO MARINUS Linn.

ENGYSTOMA OVALE Schneid.

HYLA VAUTERII Dum. Bibr.

HYLA PULCHELLA Dum. Bibr.

The normal coloration is presented by numerous specimens. Another one is brown, with three darker, brown dorsal bands, a median narrow one and two lateral wider ones, with indistinct superior margins above the light border of the lateral brown band. The hind-legs are also cross-banded, a character not found in the normal form.

PALUDICOLA RANINA, sp. nov.

Metatarsal tubercles, two; minute. A subround inguinal gland. Skin of back with delicate folds, viz., a straight dorsolateral and a median pair, which approach each other above the scapulae, then diverge, then approach in front of the sacrum, and then diverge and disappear. Numerous short plicæ and narrow warts on each side of the coccyx; superior surfaces of posterior legs with smaller warts. Toes slender, free, with narrow dermal margins. Abdomen with a circular fold. Form of head and body rather elongate, legs not long, feet long; heel of extended hind leg reaching to middle of orbit. Tympanic disc faint or invisible, forming a vertical oval, whose long diameter is a little more than half that of the eye-fissure. The muzzle is acuminate, and is a little longer than the long diameter of the eye. The profile descends to the end of the muzzle, which is narrowed, but not prominent. Nostrils nearly terminal. Tongue pyriform, entire. When the fore limb is extended, the wrist reaches the end of the muzzle. First finger shorter than second; third quite long.

Length of head and body, M. .028; of head to posterior line of tympana, .009; width of head at the same, .0095; length of fore limb, .018; of fore-foot, .008; of hind limb, .045; of hind foot, .017.

The color varies from brown to gray above. A black band passes from the orbit to the level of the abdomen, its abdominal border extending from the axilla three-quarters way to groin. A black line on inferior edge of canthus rostralis. Lip from this band to the postorbital band, with numerous light-brown striae extending downwards and backwards. Inguinal gland with a round black spot, with some pale-brown lines concentric to it in front and below. A brown band between superciliary edges, and a T-shaped brown mark on top of muzzle. Middle line between dermal plicæ brown, generally with a pale brown spot at their point of expansion. A light-brown band extends from this brown space posteriorly and downwards on each side. Other brown shades on the lateral dorsal region. In some of the specimens some of these markings of the upper surfaces are wanting. Below straw color, thickly speckled with reddish-brown everywhere, excepting on the posterior abdominal and subanal regions. Legs with brown cross-band, with narrow pale edges, two on the tibia, very oblique. Concealed posterior face of femur, brown with pale speckles.

This species is apparently abundant at Sao Joao do Rio Negro. The smaller specimens are often darker colored, have more numerous dorsal plicæ, and have four dorsal, brown, longitudinal bands. It agrees with the genus *Paludicola* as I have defined it (under the name of *Gomphobates* R. & L), in the absence of frontoparietal fontanelle, the non-union of the prefrontal bones, and the osseous xiphisternum with narrow bifurcate cartilage.

In my estimation, Mr. Boulenger has united two, and perhaps four, genera, in his revision of *Paludicola* (*Catal. Batr. Salientia, Brit. Mus.*, 1882, p. 229). I have distinguished these genera as follows:

- I. A frontoparietal fontanelle.
 Inguinal glands *Pleurodema*.
 No inguinal glands *Liuperus*.

- II. Frontoparietal bones ossified.
 Inguinal glands *Paludicola*.

M. Boulenger has shown that the genera established on the degree of development of the metatarsal shovels are not tenable.

LEPTODACTYLUS OCELLATUS Linn.

LEPTODACTYLUS MYSTACINUS Burm.

PSEUDIS PARADOXA Laur.

Reptilia.

ANOPS KINGII Bell.

The genera of the Amphisbaenidæ, besides the Lepidosterninæ, are the following, as they appear to me :

I. The nasal plates lateral, separated from each other on the median line.

- a.* Nasals separated by the rostral.
 Rostral with a median cutting edge, extending between the frontonasals ; *Anops* Bell.
 Rostral flat, not extending between frontonasals *Diphalus** Cope.
aa. Nasals separated by the frontonasals.
 Frontonasals united into one plate ; no frontals *Blanus* Wagl.
 Frontonasals united ; frontals present *Cadea* Gray.

II. The nasal plates in contact with each other on the median line.

- a.* Preanal pores present.
 Nasal plates distinct *Amphisbana* Linn.
 "Nasal plates united." Gray *Typhloblanus* Fitz.
 Nasals, frontonasals and anterior labials united *Ophioproctes* Boul.
aa. No preanal pores.
 Nasal plates distinct *Aporarchus* Cope.

AMPHISBÆNA TRACHURA, sp. nov.

Before giving the detailed characters of this species, I will compare all the true Amphisbænæ of which I can obtain information. With extended explorations this number has so increased, that new definitions are needed.

I. No supraorbital plates (*Amphisbana*).

- A.* A preorbital plate.
 A suborbital plate ; caudal rings 26 ; anal pores 8. *A. subocularis* Peters.
 A suborbital ; caudal rings 24 ; anal pores 4 *A. mildei* Peters.
 No suborbital plate ; 4 superior labials, last largest ; 3 inferiors, first very large ; a large temporal on each side *A. kraussi* Peters.

* Type *Diphalus fenestratus* Cope. Proc. Acad. Phila., 1861, p. 76; *Amphisbæna antillensis* R. & L.

- AA.* No preorbital plate.
- a.* No suborbital plate.
 - β.* Symphyseal plates wide as, or wider than long.
- Four superior labials ; caudal rings 17 *A. alba* L.
- ββ.* Symphyseal plate longer than wide.
- Superior labials 4 ; head short, wide ; tail smooth ; above spotted yellow and brown *A. occidentalis* Cope.
- Superior labials 3 ; head acute ; tail smooth ; uniform above.
- A. darwini* D. & B.
- Superior labials 3 ; head acute ; tail conical, with 18 rings ; several terminal rings very distinct and divided into prominent hard tubercles ; color uniform above *A. trachura* Cope.
- aa.* A suborbital plate.
 - β.* Two small labials below suborbital.
- Four superior labials ; symphyseal and postsymphyseal narrow ; caudal rings 17, smooth *A. angustifrons* Cope.
- ββ.* One large labial below suborbital.
- Superior labials 4 ; tail smooth, with sixteen rings ; symphyseal and post-symphyseal plates square ; unicolor above *A. beniensis* Cope.
- Superior labials 3 ; tail smooth with 26-8 annuli ; unicolor above.
- A. pretrei* D. & B.
- aaa.* Two suborbital plates.
- Superior labials 3 ; symphyseal and postsymphyseal plates square ; tail with 29-33 smooth annuli ; spotted above *A. fuliginosa* Linn.
- II. A supraorbital plate ; two frontonasals.
- a.* No preorbital (*Zygaspis* Cope).
- Several pairs of parietals and temporals ; inferior labials 4.
- A. quadrifrons* Peters.
- III. A supraorbital and preorbital plates ; frontonasals united.
- Cynisca* Gray.
- One pair of parietals and temporals ; inferior labials 3. *A. leucura* D. & B.
- The *Amphisbena vermicularis* D. & B. probably enters the above synopsis near to the *A. darwini*, but I cannot learn all of its characters. It is distinct from all the species of Division I, in having a more slender body with more numerous annuli, viz., 232, according to Duméril and Bibron. I cannot now give the characters of the *A. camura* Cope, as the specimens are mislaid.
- In general appearance the *Amphisbena trachura* is a good deal like the *A. pretrei* as figured in the zoölogy of Castelnau's journey in South America. It also resembles in general the *A. angustifrons* from Buenos Ayres. The head is elongate and the muzzle decurved and prominent. The rostral plate is just visible from above. The frontonasals are each longer than wide. The frontals form an oval which is just as wide as long. The third superior labial reaches the ocular, and the row behind these two plates consists of four scales to the frontal. Inferior labials

three. Symphyseal is broadly truncate behind. The postsymphyseal (geneial) is a longitudinal oval, and each side is equally divided between the first and second labial and the postgeneial. The latter is separated from the second and third labials by a triangular scute. Preanal pores four; preanal scuta eight, the median much longer fore and aft. Annuli, 196 on the body, and 18 on the tail. The latter is compressed at the extremity so that the tip is a vertical oval. The last half dozen grooves are deep and the scales are represented by semi-globular bosses, as in the genus *Rhineüra*.

Total length, M. .315; of head to canthus oris, .0095; of tail, .030.

Color above, lead color, with a mulberry shade; below, light yellowish.

APORARCHUS PRUNICOLOR, gen. et. sp. nov.

The genus has been defined in the key under the head of the species *Anops kingii*. It is simply *Amphisbaena* without preanal pores.

The only specimen on which the species rests is of smaller size than those which represent the species enumerated in the above table, excepting the *A. occidentalis*, which is the smallest of the genus.

Rostral plate scarcely visible from above; common suture of nasals short; nasofrontals each as long as broad; frontals each longer than broad; a pair of well-distinguished square parietals. Labial, 3-3, the third reaching the ocular, so that there is no subocular. No superciliary or preorbital plate. Three plates in the row from canthus oris to frontal plate. Symphyseal broader than long, truncate posteriorly; postsymphyseal broad as long, subcircular, each half bounded by the postgeneial, and first and second labials to an extent represented by the order of mention. Last inferior labial twice as long as deep. Annuli 186 on the body and 23 on the tail. Preanal scales eight, the row preceded by a groove which is wider than the others. Tail obtuse, caudal annuli entirely smooth.

Total length, M. .214; of head to canthus oris, .006; of tail, .029.

Color, uniform plum-color above and below, excepting the lower jaw, chin and part of pectoral region and a postanal crescent, which are white. All the grooves of the inferior surface are white also, so that the animal has a latticed appearance below.

PANTODACTYLUS BIVITTATUS Cope. *Proceeds. Academy Philada.*, 1863,
p. 103.

ACRANTUS VIRIDIS Merr. Numerous specimens.

TEJUS TEQUEXIN Linn.

OPHEODES STRIATUS Wagler.

PHALOTRIS MELANOPLEURUS, sp. nov.

The genus *Elapomorphus* of Wiegmann, as defined by Duméril and Bibron, was divided by me in 1863 into three genera, one of which retained the original name, and the other two received the names of *Phalotris* and *Apostolepis*. Numerous species have been since added to

the genus, and the new species falling readily into the division I proposed, confirm its propriety. Those with two internasal and two prefrontal plates are true Elapomorphi. They are *E. blumii* Wiegm., *E. wuchereri* Gthr., *E. lepidus* Rhdt., and *E. mexicanus* Gthr. The genus *Apostolepis* has distinct prefrontal plates but no internasals. The species are: *A. d'orbignyi* D. & B.; *A. flavotorquatus* D. & B.; *A. erythronotus* Peters; and *A. assimilis* Rhdt. In *Phalotris* there are two internasals, but only one prefrontal. The species are: *P. tricolor* D. & B.; *P. bilineatus* D. & B.; *P. lemniscatus* D. & B., and the subject of the present description.

Scales in different longitudinal rows, all rather short and wide. Muzzle narrow; rostral plate prominent, forming more than a semidisk in outline. Internasals quite small, nearly triangular. Prefrontal wider than long, not reaching labials. Frontal large, its parietal border as long as its superciliary. Parietals elongate; their median suture considerably exceeding length of frontal plate. Nasal elongate behind nostril, touching the preocular, which is longer than high; two small postoculars. Temporals 1-1, the anterior very narrow in one specimen; just reaching, and in another not reaching, inferior postocular. Superior labials six, second and third in orbit. Inferior labials seven, fourth and fifth very large; first in contact with its mate of the other side. Geneials well developed, posterior pair equal to anterior. Gastrosteges, 211; anal double; urosteges, 25. Tail acute.

Color black everywhere, except a wide red dorsal band covering five and two half rows of scales. In one specimen this band is divided on the median row of scales by a black line; in another specimen this line extends but a short way behind the nape. A yellow collar with a black posterior edge above. Sides of throat yellow; head black. The free edges of all the scuta, scutella and black scales, are white.

Total length, M. .311; of head to canthus oris, .006; of tail, .025.

OPHEOMORPHUS DORSALIS Peters. Monatsberichte Berlin Akademie, 1863, p. 283. Abundant.

OPHEOMORPHUS FUSCUS, sp. nov.

Scales in seventeen rows, all but those of five median rows as wide as, or wider than, long. Muzzle moderately obtuse, internasals and prefrontal subquadrate; frontal and superciliary plates elongate; parietals moderate, bifurcate posteriorly. Frontal narrowing posteriorly; posterior angle less than right. Loreal higher than long. Preocular not reaching frontal; two postoculars, both in contact with the single temporal of the first row. Other temporals two, the superior long, leaving but two small ones for contact with the parietals behind, one of them being median. Eight superior labials, fourth and fifth entering orbit; sixth and seventh higher than long. Inferior labials ten, sixth the largest and the last one in contact with the geneials. Postgeneial equal pregeneials. Gastrosteges, 182; anal divided; urosteges, 55.

Above olive or yellowish-brown, all the scales with a blackish border.

which is widest on the apex of the scale. Head above and on sides uniform brown, scuta in some specimens narrowly black-edged. Below yellow, the scuta and scutella with narrow blackish edges, frequently imperfect on the middle of the former.

Total length of a median specimen, M. .695; of head to canthus oris, .019; of tail, .112.

This species is quite abundant at Sao Joao, and some of the specimens reach a larger size than the one measured. It is nearly allied to the *O. meleagris* Shaw, which is, to judge from the collection made, the most abundant snake at Sao Joao. The latter always has nineteen rows of narrow scales, and the color is constantly different. The *O. fuscus* never has the black band through the eye, nor the broad black borders and centres of the cephalic scuta, nor the ventral black spots and cross-bands of the *O. meleagris*. It never has the imperfect black dorsal spots and tail-bands characteristic of the variety *O. m. semilineatus*, which is the most abundant form at Sao Joao. Young specimens of the *O. fuscus* agree exactly with the adult in color.

OPHEOMORPHUS MELEAGRIS Shaw. *Liophis merremii* Dum. Bibron.

Principally represented by the Southern variety, *semilineatus* Cope (Proceedings Academy, Philadelphia, 1860, p. 252). Very abundant. The young of this form have the dorsal spots very distinct, which are feebly represented in the adult. They run more or less together to form imperfect cross-bands, but mostly alternate on opposite sides of the middle line. The top of the head is black.

With increasing age, then, this species becomes much lighter colored; yellowish and light bluish, taking the place of a great deal of black.

APOROPHIS CONIROSTRIS Günther.

APOROPHIS CYANOPLEURUS, sp. nov.

The species of Aporophis (Cope, Proceedings Amer. Philos. Soc. 1877, p. 18, *Lygophis olim*, nec. Fitzingeri = *Philodryas*) are sometimes referred to Dromicus and sometimes to Liophis. They may be readily distinguished from the latter genus by the absence of scale-fossæ (sometimes called scale pores), while they differ from Dromicus in the shorter tail. This portion represents a fourth or a little more of the total length in Aporophis, and a third or more in Dromicus. It is quite possible that the groups may have to be united in one genus in future, but I have not yet met with intermediate forms. The species of Aporophis known to me are: *A. conirostris* Gthr.; *A. lineatus* Linn.; *A. dilepis* Cope*; *A. flavifrenatus* Cope (= *Coronella pulchella* Jan.); *A. anomalus* Gthr. (= *L. rutilus* Cope); *A. nicagus* Cope; *A. undulatus* Wied. (Dromicus Peters); *A. juliae* Cope; *A. melanocephalus* Peters (*Dromicus melanocephalus*, Monatsber. Berl. Acad., 1863, 277; dentition not described). Aporophis

* This species differs from *A. lineatus* in color, and not only in its two pre-ocular plates, as supposed by Dr. Fischer.

only differs from Rhadinæa in its diacranterian dentition; a character which will probably prove to be not entirely constant.

The present species is quite nearly allied to the *A. undulatus* of Wied. The scales are in seventeen rows, and those of the first row are longer than deep. The rostral plate is transverse, and its apex visible from above. The internasal and prefrontal pair are wider than long. The frontal is elongate and with parallel sides, and its length exceeds that of the muzzle in front of it, and equals that of the common occipital suture. The occipital plates are long, equaling the width between the posterior exterior angles of the superciliary plates. The loreal plate is higher than long. The single preocular reaches the summit of the front, but not the frontal plate. Two postoculars, each deeper than wide. Temporals 1-2-3. Superior labials eight, eye resting on fourth and fifth; all longer than high, excepting the fifth. Inferior labials eight, fifth largest and in contact with postgenitals; all longer than deep. Postgenitals considerably longer than pregentials. Total length, .805; length of head to rictus oris, .021; length of tail, .245. Gastrosteges, 150; urosteges, 88; anal divided.

Color above bluish olive, with a median dorsal brown band with ill-defined borders, of four scales in width. Sides, up to the front row of scales inclusive, dark slate blue, which forms a band from the canthus oris to the end of the tail, which extends also on the ends of the gastrosteges and urosteges. On the anterior third of the length in the larger specimen, and on the greater part of the body in the smaller, this part of the band isolates itself into dark round spots; on the upper edge of the lateral band every other scale has a pale spot in the centre. Head dark brown above. A black band passes through each eye from the end of the muzzle, and following the edge of the occipitals unites on the nape into a single median band which continues as the dorsal band. Belly yellow, gastrosteges bluish at the bases and edges, forming cross-lines.

TACHYMEENIS HYPOCONIA Cope. Proceedings Academy Phila., 1860, p. 247.

Mesotes obtrusus Jan., Archiv. p. la Zoologia Modena, 1863, Coronellidæ, p. 96. Abundant.

THAMNODYNASTES NATTERERI Mikan. Abundant.

DRYMOBIUS PANTHERINUS Merrem.

HERPETODRYAS CARINATUS Linn.

PHILODRYAS SCHOTTII Fitz. Abundant.

PHILODRYAS OLTERSII Licht. Abundant.

TROPIDODRYAS ÆSTIVUS D. & B. *Dryophylax* D. & B.; *Philodryas* Günther.

The name Tropidodryas is proposed for a genus which differs from Philodryas only in having keeled scales. It includes the *T. æstivus* and the *T. serra* (*Dryophylax* D. & B.).

LEPTOGNATHUS CATESBYI D. & B.

OXYRRHOPUS RHOMBIFER D. & B.

OXYRRHOPUS PLUMBEUS Wied.

LYSTROPHIS DORBIGNYI Dum. & Bibr. *Heterodon dorbignyi* Dum. & Bibr.

The generic name Lystrophis is now proposed for the Heterodontes of Duméril and Bibron, which have smooth scales and a divided anal plate. Catachlein has been already proposed by Jan. for the smooth species with entire anal plate.

XENODON RHABDOCEPHALUS Boie.

XENODON NEOVIDII Günth.

HELICOPS INFRATÆNIATUS Jan. *Iconographie Ophidiens*, Livr. 28, 1868.

Pl. iii, fig. 3. *Helicops trivittatus* Cope. *Proceeds. Am. Philos. Soc.*, 1877, p. 92.

One side of the head of the single specimen displays but seven superior labials; the other side eight. Both sides display two loreal plates, one above the other.

HELICOPS BALIOGASTER, sp. nov.

Scales in nineteen longitudinal rows; those of six rows on each side as wide as, or wider than long; all keeled except those of the first row on each side, the second very weakly. Dorsal scales finely striate. Head little distinct, muzzle very short. Nostrils superior. Each nasal plate and the loreal higher than long. Preocular very narrow; two postoculars, each longer than deep. Internasal small; prefrontals wider than long. Frontal long with parallel sides, occipital rather long. Temporals 2—2, the superior of the anterior pair only reaching the postoculars, and in contact with both of them. Superior labials eight, the fourth only entering the orbit. Inferior labials eleven, seventh largest, and the last one in contact with the postgenaeials, which are about as long as the pregenaeials. Total length, M. .587; of mouth to canthus, .017; of tail, .114. Gastrosteges, 128; one divided anal; scutella, 69.

Superior and lateral surfaces to the middle of the second row of scales blackish brown, with a lighter brown band on the sixth and adjacent halves of the fifth and seventh rows. A yellow lateral band on the adjacent halves of the first and second rows of scales. Belly black with one or two square yellow spots on the middle portions of most of the gastrosteges, which are sometimes so arranged as to leave a black spot in the middle, which together form parts of a median black band on the thoracic region. Tail with a median black band below. A dark cross-band connecting the corners of the mouth across the throat. In a young specimen this cross-band connects the ends of two longitudinal black stripes, which extend from each penultimate inferior labial. A black band on each side of the geneials connected by a cross-bar across the ends of the postgenaeials. In the younger specimen the dark brown of the back is lighter, and each

dorsolateral brown band has a row of small dusky spots along its superior and inferior edges.

This species is near the *H. infrataeniatus* Jan., and future investigation may prove it to be a variety of that species. In two specimens of the latter the scales are in seventeen rows, in three specimens of the *H. balio-gaster* they are in nineteen rows. In a small *H. infrataeniatus* the external edges of the dorsal band are not spotted but form a dark band. The color of the lower surface in the two species is quite different.

I note here that the *Helicops allenii* Garman, from Florida, has the scales entirely smooth. It is necessary therefore that it be placed in another genus, which I call Liodytes. Its diagnosis is that of Helicops with the addition, scales smooth.

ELAPS ALTIROSTRIS Cope. Three specimens.

BOTHROPS ALTERNATUS D. & B. Common.

Explanation of Plate.

Heads and tails of Amphisbaenidae. Fig. *a* Head, from above ; *b*, from below ; *c*, from the side ; *d*, the tail with preanal plates and pores, from below.

Fig. 1. *Amphisbena trachura* Cope.

Fig. 2. *Amphisbena beniensis* Cope.

Fig. 3. *Amphisbena occidentalis* Cope.

Fig. 4. *Amphisbena angustifrons* Cope.

Fig. 5. *Aporarchus prunicolor* Cope.

Fig. 6. *Amphisbena alba* Linn (Three specimens).

Fig. 7. *A. alba* var. *radiata* Cope. Caudal annuli 18 ; of the body 236 ; preanal plates 12 ; pores 8. Uniform white. Habitat unknown. One specimen.

Fig. 8. *A. alba* var. *dissecta* Cope. Annuli to vent 226 ; of tail 18 ; preanal plates 12 ; pores 8. Brownish above, below white. Venezuela. One specimen.

The Lineal Measures of the Semi-Civilized Nations of Mexico and Central America. By Daniel G. Brinton, M.D.

(Read before the American Philosophical Society, January 2, 1885.)

Positive progress in constructive art can be accurately estimated by the kind and perfection of the instruments of precision employed by the artists. A correct theory of architecture or of sculpture must have as its foundation a correct system of weights and measures, and recognized units and standards of gravity and extension. Where these are not found, all is guess-work, and a more or less hap-hazard rule-of-thumb.